Choptank Basin Summary

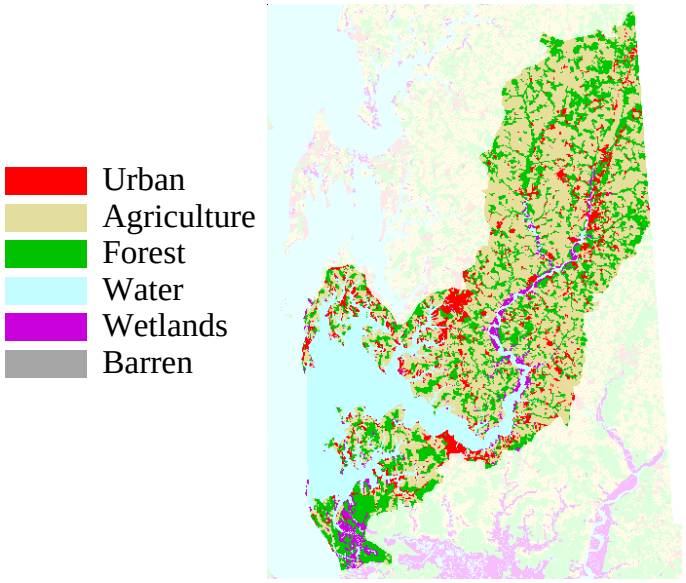
Executive Summary
1985-2003 data, February 2005

The Choptank Basin is largely agricultural (58 percent). Forested lands make up another third of the watershed. Agricultural land contributes more than two-thirds of the nitrogen and phosphorus. Water quality is generally better in the downstream mesohaline areas (Outer Choptank and Little Choptank) than in the upstream areas, which have high nitrogen levels and poor water clarity. An exception is poor dissolved oxygen levels in the mesohaline Little Choptank. Biological communities reflect this, with bay grasses improving in downstream areas, but not in the upstream areas. Benthic communities are generally good, but degraded around the Cabin Creek area.

LOADINGS (based on watershed model)

Modeled nitrogen, phosphorus, and sediment loadings have decreased significantly.

- Total nitrogen loadings have decreased 30 percent from 1985 to 2002 (down from slightly over 6 to slightly over 4 million pounds).
- Total phosphorus loadings have decreased almost 40 percent from 1985 to 2002 (down from 0.64 to 0.39 million pounds). Point sources contribute a little over half and urban non-point sources a little over 40 percent.
- Sediment loadings have declined considerably from 1985 to 2002 (down from 93,000 tons to 55,000 tons), but are still high.
- Agricultural land is still the major contributor of nitrogen, phosphorus, and sediment.



Choptank Basin 2000 MDP Land Use

LONG-TERM TIDAL WATER QUALITY (based on monitoring concentration data)

Although phosphorus and suspended solids levels have improved at some stations, nitrogen levels have not improved anywhere and these three parameters have worsened at some stations. Algal abundance and water clarity have worsened, but remain relatively fair in the Outer Choptank and Little Choptank compared to other tributaries.

- Total nitrogen levels have worsened at Ganey Wharf and remain high (poor) at Ganey Wharf and at US Route 50. In contrast, total phosphorus levels have improved at three stations and are relatively fair to good compared to other tributaries; unfortunately phosphorus levels have worsened at the upstream Red Bridges station. Although sediment levels have worsened at

US Route 50, they have improved in the Outer and Little Choptank, and remain relatively good to fair throughout the basin.

- Algae levels have worsened in the Outer Choptank and at Route 50, but improved at Ganey Wharf. They remain relatively fair at all stations.
- Dissolved oxygen levels are poor (< 2 mg/L) at the Little Choptank station, but good (> 5 mg/L) at the Outer Choptank station.

BIOLOGICAL and ECOSYSTEM MONITORING

Bay grasses have improved in downstream but not upstream areas. Overall benthic community health is good, except around the Cabin Creek area.

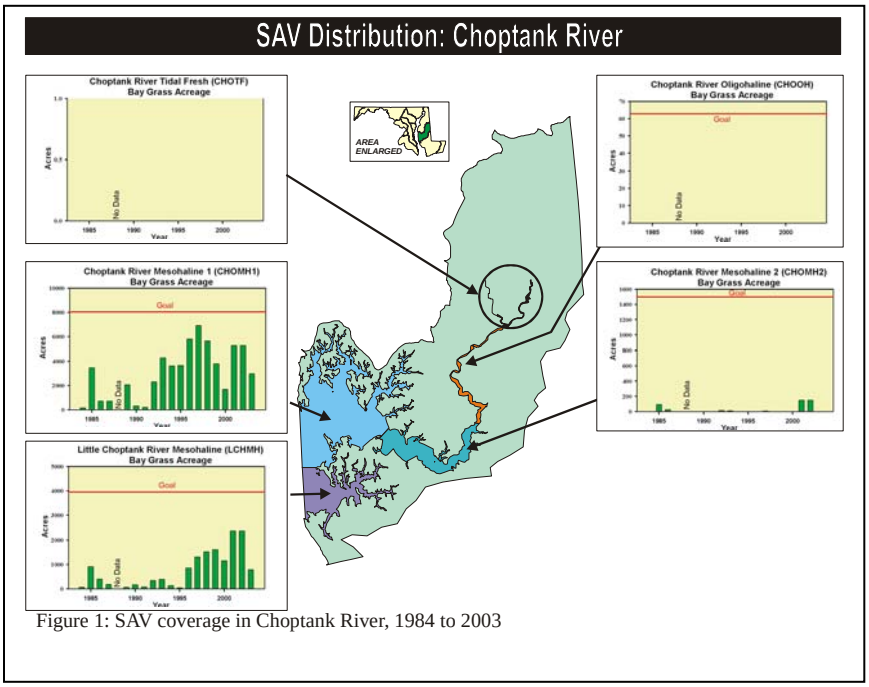


Figure 1: SAV coverage in Choptank River, 1984 to 2003

- SAV has never been reported in the tidal fresh and oligohaline regions (above Bow Knee Point) of the Choptank River. Experimental transplants of wild celery near Denton were not successful, due to poor water quality and heavy grazing.
- In contrast, the Outer Choptank River has generally shown increasing SAV distribution since 1991, and in the Little Choptank River, SAV coverage dramatically increased after 1995 to 60% of the goal in 2002.
- Overall, the Choptank River had good benthic community condition during the 1999-2003 period. However, degraded sites in the upper mesohaline portion of the river were located around the Cabin Creek area.
- The Upper Choptank is nutrient saturated in all seasons. The other stations tend to be largely nutrient saturated in winter, largely phosphorus limited in spring, and mostly nitrogen limited in summer and fall.

For more detailed information see the complete basin summary at:
http://www.dnr.state.md.us/bay/tribstrat/basin_summaries.html.